

A STUDY OF FEMALE COLOR PREFERENCES IN CLOTHING FOR
USE BY COMMUNICATORS IN EXTENSION EDUCATION

by

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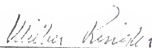
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CHAPTER I

INTRODUCTION

Personnel in Extension communications have the responsibility of presenting effective educational messages. To achieve the desired result of having a message reach the intended target and attain the intended effect, requires the knowledge and application of many interrelated elements of communication. For media using or referring to visual communications, one element of increasing concern is the use of color. Color, like other communication design elements, can be used to enhance a message, to have a neutral effect, or to interfere with a message. A noted American authority on color, Faber Birren, emphasizes the power of color in communications:

The point is often missed that color for the sake of color is not enough. Nor is individual taste ever assured of mass acceptance....people respond emotionally toward color. They are patriotic-almost religious-about their predilections. Decorate or adorn a beautiful form in a disliked hue, and it will be rejected.¹

Extension communicators could utilize research information in making decisions when selecting colors for educational messages.

1. NEED FOR THE STUDY

Vague guidelines, based on research, exist concerning color preferences and their relationship to communications.

¹Faber Birren, Color, Form, and Space. (New York: Reinhold Publishing Corporation, 1961), p. 78.

Psychologists have found that there was some agreement about color preferences among different people. This agreement has been found to be as significant as that between scores on intelligence tests. The agreement has not been restricted to persons of European descent, but it has also been found to be consistent among many colored races.¹

A breakdown exists when general findings concerning color preferences are applied to specific situations. Starch found, in an analysis of 3,819 advertisements in Life and The Saturday Evening Post, that full-color advertisements received from a 50 per cent to an 85 per cent higher score than comparable black-and-white advertisements, while two-color advertisements showed a zero or negative gain over black-and-white ads.²

Generalizations have not proven to be accurate guidelines when selecting colors for many specific situations. Information is needed that will assist in pinpointing the best color applications for less general situations. Guidelines for the use of color represented in the clothing seen in visual communications is one such need. Extension communication efforts in newspapers, magazines, motion pictures, television, and other visual media frequently represent people in various clothing colors as a

¹H. J. Eysenck, "A Critical and Experimental Study of Colour Preferences," The American Journal of Psychology, LIV (July, 1941) p. 394.

²Harold J. Rudolph, "Report Shows that Four-Color Ads are Advertisers' Best Buy," Printers' Ink, CCLXIII (May 16, 1958) p. 13.

part of the message being communicated. A documented reference of the color preferences of females for different types of clothing could help the Extension communicator in narrowing color design selections to a more limited area with less chance of having a specific message rejected and more chance of having a specific message accepted.

II. STATEMENT OF THE PROBLEM

Predetermining the effect of color in communications is a complex pursuit. Many variables influence color preferences; shape, line, art styles, color in combinations, and different types of illumination are examples. While it has been previously shown that deductions from broad generalizations can provide wrong guidelines when selecting specific colors in specific situations, the researcher must also be cautious of using narrow specific color studies for making broad generalizations. For instance, the hour of the day and the amount of light striking a specific color could result in different color preferences than at other times of the day and in different amounts of light reflection. The essence of selecting an appropriate color research problem is insuring the selection of a limited area of study which has significance for broader applications. For the study attempted in this writing, determining the different types of color preferences of females is the problem. More specifically, a breakdown of the problem should show the

color preferences that various types of women have for different types of clothing projected on the various ages of both males and females.

III. OBJECTIVES

It is hoped that the research will reveal data which can provide more accurate decisions when the Extension communicator selects clothing colors in visual messages attempting to reach females.

The objectives are:

1. To examine the types of color preferences shown by females in relation to specific types of clothing projected on the various ages of males and females.
2. To further examine the types of color preferences made by females of various ages, incomes, educational levels, et cetera.
3. To examine possible relationships or differences between the different geographic areas of Kansas.

IV. HYPOTHESES

Hypothesis 1. There will be no differences between the scores of the respondents for the different types of color projected on the different types of clothing.

Hypothesis 2. There will be no differences between the color preference scores when the colors are projected on the

different ages of males and females.

Hypothesis 3. There will be no significant differences between the color preference scores and the four geographic areas of Kansas.

Hypothesis 4. There will be no significant differences between the different types of color preferences and the different ages of the respondents.

Hypothesis 5. There will be no significant differences between the different types of color preferences and the different levels of formal education of the respondents.

Hypothesis 6. There will be no significant differences between the different types of color preferences and the different home locations of the respondents.

Hypothesis 7. There will be no significant differences between the different types of color preferences and the different media preferences of the respondents.

Hypothesis 8. There will be no significant differences between the different types of color preferences and the different income levels of the respondents.

Hypothesis 9. There will be no significant differences between the different types of color preferences and the different types of clothing fashions worn by the respondents.

Hypothesis 10. There will be no significant differences between the different types of color preferences and the types of clothing color worn by the respondents.

Hypothesis 11. There will be no significant differences between the different types of color preferences and the different hair shades of the respondents.

Hypothesis 12. There will be no significant differences between the different types of color preferences and the different skin shades of the respondents.

Hypothesis 13. There will be no significant differences between the different types of color preferences and the different personality types of the respondents.

Hypothesis 14. There will be no significant differences between the different types of color preferences and the leadership types of the respondents.

V. LIMITATIONS AND DELIMITATIONS

Limitation 1. Only people living in the State of Kansas were involved in the study.

Delimitation 1. Color choices in the questionnaire were restricted to blue, green, red, and yellow.

Delimitation 2. Only clothing colors were tested.

Delimitation 3. Only female responses were tested.

Delimitation 4. The tests were referred to the imagination, not the physical eye.

Delimitation 5. Colors were not tested in combinations.

Delimitation 6. All tests were taken during one time of the year.

VI. DEFINITION OF TERMS USED

Message. Message was used to refer to any intended communication emitted from any sending source.

Color. Color referred to all visible stimuli to the human eye; including the colors black and white.

Hue. Hue referred to the major identification quality of a specific color; such as red, green, blue, and yellow.

Value. Value referred to the darkness or lightness of a particular hue.

Warm color. Warm colors referred to red and yellow hues.

Cool color. Cool colors referred to blue and green hues.

CHAPTER II

REVIEW OF THE LITERATURE

Color is omnipresent in human experience. Authorities claim that even the closed eye can not escape color as it presents darkness which is a color.¹ Some researchers have not classified black and white as being colors. However, these researchers did reveal that even when color is considered to be hues other than black and white, 82.7 per cent of the subjects tested for color content in dreams reported the presence of color.²

Colors, regardless of classification, do not yield identical reactions from all people. Psychologists investigating the effect of color on Rorschach projective tests, found that black and white colors produced significantly different ratings than other colors.³ The idea of colors causing emotional differences was suggested in the same tests when scores were correlated with Taylor Anxiety Scales and found to be significantly different.⁴

¹Faber Birren, Color, Form and Space (New York: Reinhold Publishing Corporation, 1961), p. 7.

²Edwin Kahn, William Derment, Charles Fisher, and Joseph E. Barmack, "Incidence of Color in Immediately Recalled Dreams," Science, CXXXIX (September 28, 1962), p. 1054.

³Leon H. Levy and Ronald B. Krug, "The Connotative Impact of Color on the Rorschach and Its Relation to Manifest Anxiety," Journal of Personality, XXV (September, 1957), p. 624.

⁴Ibid.

The initial color tests have found that the variety of colors can affect different types of people in various ways.

I. COLOR INFLUENCE IN SOCIETY

Color has been an influence on every phase of daily life. For instance, one experiment tested the relationships between color and the taste of food.¹ Another survey revealed that decisions involving color choices were the most frequently listed problem among building constructors.²

In education, the value of the proper use of color was demonstrated on visual information displays. A test showed that the redundant use of color codes resulted in a reduction of 65 per cent in visual search tasks and 69 per cent in counting tasks.³

In business, a national manufacturer claims that an inappropriate use of color in application to his products, would force his company out of business.⁴

¹ Rose Marie Pangborn and Brenda Hansen, "The Influence of Color on Discrimination of Sweetness and Sourness in Pear-Nectar," The American Journal of Psychology, LXXII (June, 1963), p. 317.

² Mary Polson Charlton, "Reactions to Built-in Color in Houses," Journal of Home Economics LVII (March, 1965), p 62.

³ Sidney L. Smith, "Color Coding and Visual Separability In Information Displays," Journal of Applied Psychology XLVII (1963), p. 358.

⁴ Guil Johnson; "Concentration on Color Doubles Sales for Wooster Rubber Company," Printer's Ink CCLXI (December 6, 1957), p. 62.

In industry, packaging authorities claim that all efforts to provide a desirable consumer product would fail if the exterior container color strikes discord in the eyes of the intended buyer.¹

II. COLOR INFLUENCE IN COMMUNICATIONS

Color has become standard in most magazines, and its use is increasing in newspapers and television.

In magazines, an independent survey reported that color advertising attracted as much as an 81 per cent increase in readership over black-and-white advertising.² Another analysis of twelve million inquiries received from magazine advertisements, showed that color ads produced 45 per cent more inquiries than black-and-white advertisements.³

In newspapers, a study of over nineteen thousand advertisements showed that color ads increased readership 68 per cent over black-and-white advertisements of the same size and in the same product categories.⁴

¹W. T. Brown and J. L. Jenemann, "The Use of Color in Transparent Packaging," Modern Packaging XXIX (April, 1956), p. 95.

²Daniel Starch, Measuring Advertising Readership and Results (New York: McGraw-Hill Book Company, 1966), p. 60.

³Ibid.

⁴Ibid. p. 61.

III. COLOR GENERALIZATION CAUTIONS

With the various powers attributed to color, many cautions have been raised concerning the application of color. A study comparing the perception of reality gained from color versus black-and-white films, showed that color was not superior, but that a slight trend in the opposite direction was more evident.¹ A survey of more than twenty-five thousand magazine advertisements gave substantially higher ratings to four-color advertisements over black-and-white, but two-color ads failed to show any gains.²

In a test of mailed media, the use of color did not increase the awareness of the receipt of mailed recipes; neither did it accelerate the recall of content.³

Confusion is the result of the contrasting effects or lack of effect demonstrated by the application of color. Patterns do not appear to be absolute. Previous research indicates that choosing and using color is a complex subject with many variables.

¹ Edward P. McCoy, "Influence of Color on Audiences' Rated Perception of Reality in Film," AV Communications Review X (January, 1962), p. 72.

² Daniel Starch, Measuring Advertising Readership and Results (New York: McGraw-Hill Book Company, 1966), p. 59.

³ Harold C. Young, "Mailed Media: Color and Black-and-White Comparisons," Journal of Home Economics LVII (May, 1965), p. 364.

IV. COLOR STUDIES LIMITED TO PREFERENCES

One limited area of color research is color preference. A breakdown of related factors within this area has been found in comparing color preferences with age, income, area of geographic residence, et cetera.

People from the lower social and economic classes have shown a preference for warm colors as opposed to the cool colors most frequently chosen by persons with a higher social and higher economic rating. The study comparing weekly wage earners to monthly salaried subjects showed that warm colors were chosen most often by those on the weekly pay rate while the monthly pay recipients had more preferences for cool colors. Significant differences were found at the .01 level.¹

In choosing the color of dress, occupational differences were found between retired university faculty members and retired university clerical workers. Nine-tenths of the clerical workers considered dress selection in terms of basic color, while only one-third of the faculty considered this factor.²

In the different levels of income, a direct correlation

¹Jacquelyn Hobbs McInnis and Jane Kelly Shearer, "Relationship Between Color Choice and Selected Preferences of the Individual," Journal of Home Economics LVI (March, 1964), p. 183.

²Margaret H. Sughrue, "Color Preferences In Clothing of A Selected Group of Retired Women 65 Years of Age and Over" (unpublished Master's report, Kansas State University, Manhattan, 1966), p. 33.

was found with income level and the choice of color schemes in a model home interior. Homemakers in lower income areas chose the same miniture room display , of the several color selections available, 94 per cent of the time. In contrast, only 57 per cent of the subjects from the higher income levels chose one color scheme.¹

Sex differences did not appear to indicate a wide diversity in color preference tests. A continuous examination of the day to day color preferences of the same subjects of different sexes demonstratrated considerable consistency.² One test of over thirteen-thousand men and women achieved an average preference correlation between the two sexes of 95 per cent.³ Another test of men and women of equal age and socioeconomic status, in a suburban community, revealed no differences in color preferences.⁴

Age differences demonstrated more color preference variety than sex differences. Young adults showed a higher preference for

¹Delaine Stalker, "Color Preferences and Their Us In Selected Residences in Manhattan, Kansas" (unpublished Master's thesis, Kansas State University, Manhattan, 1960), p. 79.

²J. P. Guilford and Patricia C. Smith, "A System of Color Preferences," The American Journal of Psychology LXXII (December, 1959), p. 502.

³H. J. Eysenck, "A Critical and Experimental Study of Colour Preferences," The American Journal of Psychology LIV (July, 1941), p. 394.

⁴Mary Polson Charlton, "Reactions to Built-in Color in Houses," Journal of Home Economics LVII (March, 1965), p. 179.

warm colors than did people over fifty who disliked more bright-warm colors than did the younger subjects.¹

Area of country seems to have had an influence on the choice of colors. Subjects who spent their youth in the West or Midwest chose warm colors in preference to cool hues with particular emphasis on the dull-warm colors. Subjects reared in green mountainous areas chose cool colors, both bright and dull with equal frequency.²

V. ERRORS IN DETERMINING COLOR PREFERENCES

Generalizations concerning the application of color preferences have not always applied to specific situations. More than 250 Shick electric razors were offered free to a test group of buyers. In a color breakdown of selections, the group took 42 per cent red, 24 per cent beige, 23 per cent green, and 11 per cent white. However, when the shaver went on the regular market, the actual sales figures of the several thousand units sold, found the percentages to be 36 per cent white, 25 per cent beige, 21 per cent green, and 18 per cent red.³

¹Jacquelyn McInnis and Jane Shearer, "Relationship Between Color Choice and Selected Preferences of the Individual," Journal of Home Economics LVI (March, 1964), p. 186.

²Ibid., p. 184.

³Faber Birren, "Colors that Sell: How Can You Find Them?," Sales Management (June 6, 1958) p. 40.

In another test, people having selected predetermined preferences of bright colors, had a much lower percentage ratio in selecting the same colors for use in everyday surroundings.¹

VI. GENERALIZED COLOR PREFERENCES

Despite the differences in color preferences selected in tests and the colors used in everyday life, it has been found that most people hold a general order of similar color preferences.

Without major exception, blue and other cool color combinations rated highest on most color preference tests. Totals from individual tests put both cool colors and less saturated colors significantly over preferences for warm and fully saturated hues.²

When hue saturation and brightness were held constant, preferences were highest in the region of blue to green and lowest in the region of yellow and yellow-green.³

Comparing the natural color of people having cool skin and hair colors to color preference selections, it was found that cool colored subjects preferred a higher percentage of cool colors, while subjects with warm coloring did not have similar definite

¹Jacquelyn McInnis and Jane Shearer, "Relationship Between Color Choice and Selected Preferences of the Individual," Journal of Home Economics LVI (March, 1964), pp. 183-184.

²Ibid. p. 183.

³J. P. Guilford and P. C. Smith, "A System of Color Preferences," The American Journal of Psychology LXXII (December, 1959) p. 502.

preference for types of colors.¹

A study of retired women revealed that blue, green, and purple accounted for 66 per cent of the favorite colors selected. A further breakdown of the blue choices found 18 per cent of the choices in medium blues, 16 per cent in blue-greens and 16 per cent in navy shades.²

With the exception of red in Table I, cool colors dominate the preferences of both men and women. The sex correlation in the study, including red, was 95 per cent.³

Consistent with the general preference for cool colors is the general dislike for warm colors. Bright-warm colors were listed as the most disliked, followed by dull-warm hues.⁴

VII. COLOR APPLICATION DIFFERENCES

The application of predetermined color preferences has not always followed the general preference order established on

¹Merna Barror and Anna Creekmore, "Relationship of Physical Coloring and Personality to Color Preferences for Clothing," Journal of Home Economics LVII (June, 1965), p. 450.

²Margaret H. Sughrue, "Color Preferences In Clothing of A Selected Group of Retired Women 65 Years of Age and Over" (unpublished Master's report, Kansas State University, Manhattan, 1966), p. 33.

³H. J. Eysenck, "A Critical and Experimental Study of Color Preferences," The American Journal of Psychology LIV (July, 1941), p. 394.

⁴Jacquelyn McInnis and Jane Shearer, "Relationship Between Color and Selected Preferences of the Individual," Journal of Home Economics LVI (March, 1964), p. 183.

TABLE I*

COLOR PREFERENCES OF MEN AND WOMEN

Order of color choice	7,378 men	6,247 women
Blue.....	1.45	1.68
Red.....	2.47	2.50
Green.....	2.53	2.52
Violet.....	4.36	4.14
Orange.....	4.95	5.13
Yellow.....	5.05	5.03

*The information for Table I was taken from: H.J. Eysenck, "A Critical and Experimental Study of Color Preferences," The American Journal of Psychology LIV (July, 1941), p. 393.

previous tests. Color selections in everyday situations have often been different than anticipated.

Persons choosing home interior colors preferred large areas of light types of color over large areas of dark types of color; without specific regard to the exact color itself.¹

Color preferences also varied from the general order when they were related to specific objects. The different items in Table II represent the colors of various items purchased by the American public in 1958. They indicated the diversity of color preferences for different types of objects.² It was also interesting to note that the specific color preferences did not follow the general survey of preferences indicated in Table I.

The difficult task of color prediction was further complicated when color selections related to identical objects were viewed over a period of time. From 1953 to 1958, color preferences related to different selected objects, showed an almost complete change as indicated in Table III.³

VII. STABILITY OF INDIVIDUAL COLOR TESTS

Changes in color preferences related to specific objects

¹Mary Polson Charlton, "Reactions to Built-in Color in Houses," Journal of Home Economics LVII (March, 1965), p. 179.

²Faber Birren, "Colors that Sell: How Can You Find Them?," Sales Management (June 6, 1958), p. 39.

³Ibid.

TABLE II

RANK ORDER OF COLOR PREFERENCES FOR OBJECTS SOLD IN 1958*

Automobiles	Carpeting	Kitchen Appliances	Plumbing fixtures
Oyster White	Beige	White	Pink
Black	Sandalwood	Pink	Beige
Turquoise	Light Green	Yellow	Light Green
Light Blue	Champagne	Turquoise	Light Blue
Beige Coral	Light Gray	Green	
Green	Rose		
Gray	Gold		
Yellow Gold	Turquoise		
Wall paper	Telephones	Textiles	Wall tile
Oyster White	Black	Beige	Light Gray
Beige	Oyster White	Sandalwood	Beige
Light Gray	Beige	Charcoal	Yellow
Sandalwood	Green	Turquoise	Light Green
Light Green	Red	Light Green	White
Pink	Yellow	Pink, Rose	Pink
Taupe	Blue	Red	Light Blue
Turquoise	Gray	Gold, Yellow	Turquoise

*The information for Table II was taken from Faber Birren, "Colors that Sell: How Can You Find Them?," Sales Management (June 6, 1958), p.39.

TABLE III*

RANK ORDER OF COLOR PREFERENCES IN THE SALE
OF HOME FURNISHING OBJECTS

Sale order in 1953	Sale order in 1958
Forest Green	Beige
Medium Green	Turquoise
Yellow	Pink
Pink	Oyster White
Chartreuse	Sandalwood
Light Gray	Light Green
Light Green	Light Gray
Flame	Rose
Light Blue	Light Blue
Rose	Yellow

*The information for Table III was taken from Faber Birren, "Colors that Sell: How Can You Find Them," Sales Management (June 6, 1958), p. 39.

and changes in color preferences over a period of time have indicated an unstable foundation for color preference prediction. However, individual stability tests showed that color preferences among individuals remain almost unchanged on repeat tests.¹ Repeat examinations also indicated that individual color preferences remained stable on different types of tests; the list included objective, projective, and personal involvement measures.²

IX. SUMMARY

The literature reviewed pointed to two significant findings. First, predicting color preferences on a social level led to much confusion and many contradictions. Secondly, the most reliable predictive base for predetermining color preferences, has been the association of color preferences with individual factors such as age, economic status, area of the country lived in, et cetera. These specific factors have been more reliable in predicting color preferences than have general deductions made from tests representing society as a whole. The individual, more detailed, and more specific approach also allowed the researcher to make his own groupings of specific factors for estimating the potential impact of specific colors communicated to specific types of groups and individuals.

¹Walter A. Hass, "Investigation of the Stability of Color Preferences," Journal of Consulting Psychology XXVII (1963), p. 537.

²Ibid.,

CHAPTER III

RESEARCH DESIGN AND PROCEDURES

I. DESIGN

The intent of the research was to find data which could be used by Extension communicators as one reference when selecting clothing colors for display in the various communications media.

Females representing the various geographic areas of Kansas were examined by a questionnaire to determine existing color preferences. The inquiry was designed to yield color preference data in reference to specific types of clothing worn by different types of people representing different age groups. In addition, factors of income, hair color, income, et cetera, were tested against the color preference scores.

II. SAMPLE AND METHOD OF GATHERING DATA

Of the 105 counties in Kansas, ten counties were chosen at random within four geographic areas. The four regions were selected on the basis of annual precipitation differences as seen in Table IV. The rationale behind the area selection was based on the varying amounts and types of natural color present in the four geographic areas as a result of marked differences in average annual precipitation. The State of Kansas receives more rainfall in the East than in the West. This difference is progressive from East to West. The four areas also represent a variety of

TABLE IV

PROGRESSION OF FOUR GEOGRAPHIC
PRECIPITATION AREAS OF KANSAS*

Sample counties in area I	Sample counties in area II	Sample counties in area III	Sample counties in area IV
Brown.....33.33	Butler.....32.57	Decatur.....20.86	Finney.....18.45
Crawford....40.73	Clay.....28.31	Edwards.....22.90	Greeley.....15.84
Elk.....36.52	Cloud.....25.39	Ellis.....22.62	Hamilton.....17.67
Franklin....36.41	Harper.....28.36	Graham.....20.26	Lane.....18.86
Nemaha.....33.40	Marshall....29.00	Ford.....19.84	Logan.....18.83
Neosho.....39.95	McPherson...29.84	Kiowa.....23.14	Rawlins.....18.70
Miami.....38.49	Morris.....32.43	Ness.....21.24	Sherman.....18.70
Osage.....35.51	Reno.....27.69	Osborne.....21.82	Stranton.....17.07
Shawnee....32.55	Republic....26.24	Phillips....23.27	Stevens.....18.51
Woodson....37.33	Sedwick.....29.71	Strafford...24.81	Wallace.....16.09

*Information in Table IV is based on average annual precipitation over a ninety-five year period taken from A. B. Cardwell and S. D. Flora, "The Climate of Kansas," Kansas Weather and Climate (September, 1942), p. 24.

terrain, types of economies, and population distributions.

Of the counties represented in each of the geographic areas, ten were selected at random. In each of the counties, the County Extension Home Economist was contacted by a letter from the Extension State Leader of Home Economics at Kansas State University and asked to find eight different females to answer the standard questionnaire. To help make the sample representative of various ages, educational levels, and home areas, the agent was asked to find the following eight types of females: one female, 30 years or older, high school education, lives in town; one female, 30 years or older, high school education, lives on a farm; one female, 30 years or older, college education, lives in town; one female, 30 years or older, college education, lives on a farm; one female, 29 years or younger, high school education, lives in town; one female, 29 years or younger, high school education, lives on a farm; one female, 29 years or younger, college education, lives in town; and one female, 29 years or younger, college education, lives on a farm.

The sample was deliberately high with eight questionnaires coming from forty counties. Because of the high demand placed on each County Extension Home Economist, a low return was expected with 50 per cent being set as desirable. It was also hoped that at least four counties would be represented. The initial return exceeded expectations. More than 65 per cent of the counties reported and each geographic area was represented by six or more

questionnaires for a minimum return of forty-eight questionnaires for each of the four geographic areas. A final return of 98 per cent was considered in the total evaluation.

III. MEASURING DEVICES

A five page questionnaire was designed to gather the required data. Page one gave instructions and provided an example on the correct method for answering questions. Each respondent was asked to choose between the four available colors of blue, green, red, and yellow. The test was restricted to the four colors for three reasons: the colors are basic to both pigment and light color mixing; the two colors of blue and green represent cool colors while the two colors of red and yellow represent warm colors; and the inclusion of any less pure colors could have contaminated and confused the basic purpose of the research.

It was impractical to represent the hundreds of color variations for each type of blue, green, red, and yellow in the actual pigment. Respondents were asked to imagine the four colors in any shade or intensity which they desired. The choice of the color hue, not the hue variation, was the object of the research.

The response blocks in pages two through four were staggered in their appearance to prevent scoring errors. Each color response block was set in place at random to prevent any pattern or mental set established by the respondent.

The objects corresponding to the color preference selections were varied to represent the types of clothing depicted in general communications: dress around the home; sleepwear; sportwear; and evening dress. The appearance of these factors were also staggered at random in the questionnaire to help prevent respondent scoring set.

Each respondent was asked to select color preferences for questions projected upon eight different types of people: young female, grade schooler, 6-12 year old; young female, 13-19 years old; woman, 20-49 years old; older woman, 50 years or older; young male, grade schooler, 6-12 years old; young male, 13-19 years old; man, 20-49 years old; and an older man, 50 years or older.

Following the color preference questions on the first portion of the questionnaire, five additional questions were asked concerning personal information for name of home county, age, educational level, home location, and favorite type of communication media.

The final section of the questionnaire was a seven question evaluation of the individual taking the color test by the County Extension Home Economist. Each Home Economist was asked to evaluate each of the eight respondents in terms of income level, clothing fashion, clothing color, hair shade, skin shade, personality, and leadership. The evaluation for each question was an estimation recorded within a seven-point scale.

IV. METHOD OF ANALYSIS

All questions were compared by a Chi-square analysis; the color preference scores against groupings of age, income, hair color, et cetera. The questions were also designed to fit computer cards for machine analysis. The questions answered were the same ones represented in the research hypotheses.

CHAPTER IV

FINDINGS

After comparing the variables of county area, age, education, home location, favorite communication, income, clothing fashion, clothing color, hair shade, skin shade, personality, and leadership against each of the color preference response variables, only a few significant differences were found. Of the 384 Chi-square contingency tests performed, only the nineteen listed in Table V were found to be significantly different at the .05 level. Of these, only income came close to forming a general pattern.

I. INCOME TEST PARTIAL PATTERNS

Of the thirty-two color preference variables compared against income, four showed significant differences at the .05 level. Three of the differences were found in the same clothing type area for womens' clothing, adult female, age 20-50 years old.

The first significant difference was found comparing income against dress around the home for womens' clothing, adult female, age 20-50 years old. A breakdown of the significant differences by color, showed that neutral, or mid-way incomes on a seven point scale, favored less red and yellow but more blue and green than was expected. Higher incomes at scale level six or above, showed an opposite effect; more red and yellow for dress around the home and less blue and green than expected. The lower end of the scale, or lower income levels, showed a significant difference similar

TABLE V

VARIABLES FOUND SIGNIFICANTLY DIFFERENT AT THE .05 LEVEL

(44)	Leadership against.....	(11)	*Evening dress for mens'clothing, 20-50 years old
(41)	Hair shade against.....	(13)	Sportswear for young girls' clothing, age 6-12
(41)	Hair shade against.....	(9)	Dress around the home for mens' clothing, age 20-50
(40)	Clothing color against..	(23)	Sportswear for young boys' clothing, age 6-12
(39)	Clothing fashion against(31)		Sportswear for young mens' clothing, age 13-19
(39)	Clothing fashion against(18)		Evening dress for older womens' clothing, 50 years or older
(38)	Income against.....	(30)	Dress around the home for young mens' clothing, age 13-19
(38)	Income against.....	(3)	Sportswear for womens' clothing, age 20-50
(38)	Income against.....	(2)	Sleepwear for womens' clothing, age 20-50
(38)	Income against.....	(1)	Dress around the home for womens' clothing, age 20-50
(37)	Communication against...	(13)	Sportswear for young girls' clothing, age 6-12
(36)	Home location against...	(16)	Dress around the home for young girls' clothing, age 6-12
(36)	Home location against...	(6)	Dress around the home for young females' clothing, age 13-19
(36)	Home location against...	(5)	Sleepwear for young females' clothing, age 13-19
(35)	Education against.....	(25)	Sportswear for young boys' clothing, age 6-12
(35)	Education against.....	(24)	Dress around the home for older mens' clothing, 50 years plus
(35)	Education against.....	(9)	Dress around the home for mens' clothing, age 20-50
(34)	County area against.....	(19)	Sleepwear for older womens' clothing, 50 years plus
(34)	County area against.....	(10)	Sleepwear for mens' clothing, age 20-50

*Variables tested

**Categories tested against each variable

to the very high incomes and unlike the medium scale incomes.

The second significant difference was found comparing income against sleepwear for womens' clothing, adult female, age 20-50 years old. A breakdown of the significant differences by color showed that neutral, or mid-way incomes on the seven point scale, favored more blue and less red than was expected. Higher incomes showed more yellow and red than expected and less blue. Lower incomes showed more blue and green and less yellow than expected.

The third significant difference was found comparing income against sportswear for womens' clothing, adult female, age 20-50 years old. A breakdown of the significant differences by color showed that neutral, or mid-way incomes on the seven point scale, favored more red and blue and less green and yellow than had been expected. Higher income levels favored more red, blue, and green and less yellow than had been expected. Lower income levels favored more yellow and less green and blue than had been expected.

The fourth significant difference was found comparing income against dress around the home for young mens' clothing, age 13-19. A breakdown of the significant differences by color showed that neutral, or mid-way incomes on the seven point scale, favored more blue and green and less red than expected. Higher income levels favored less blue and green and more red and yellow than expected. Lower incomes favored more blue and green and less red and yellow than had been expected.

In all of the above tests, 153 of the 205 women answering the income questions were adult females, age 20-50 years old.

II. TEST CONSISTENCY

While the totals on the color preference tests did not show significant differences, other than the possibility of income, the opposite result of considerable consistency was distinctly noticeable. More than 85 per cent of all the tests did not establish differences beyond the 50 per cent level of significance.

III. COLOR PREFERENCES BY RANK RATINGS

The overall rank rating for all tests performed gave first place to blue, second to green, third to red, and fourth to yellow, as seen in Table VI. When the categories of clothing types were totaled separately, the ratings were somewhat different as seen in Table VI. Blue continued to remain in first place, but the other three colors varied in their placings in the sleepwear and evening dress categories.

When categories were broken down into more detail, by types of people wearing the clothing categories, even more variety was found as reported in Table VII. The more specific references were found to be less general and more definitive when considering specific types of colors projected on specific types of people.

TABLE VI

GENERAL COLOR PREFERENCE RATINGS BY COLOR AND CLOTHING TYPE *

Average color preference frequency ratings for total study		
<u>Blue-first</u> 91.8750	<u>Green-second</u> 47.3438	<u>Red-third</u> 36.8125
		<u>Yellow-fourth</u> 28.8750
Average color preference frequency ratings by type of clothing categories		
Sportswear		
<u>Blue-first</u> 61.875	<u>Green-second</u> 60.125	<u>Red-third</u> 57.625
		<u>Yellow-fourth</u> 25.000
Dress around the home		
<u>Blue-first</u> 88.125	<u>Green-second</u> 59.875	<u>Red-third</u> 36.875
		<u>Yellow-fourth</u> 19.375
Sleepwear		
<u>Blue-first</u> 84.875	<u>Yellow-second</u> 47.750	<u>Red-third</u> 36.875
		<u>Green-fourth</u> 35.375
Evening dress		
<u>Blue-first</u> 129.750	<u>Green-second</u> 34.875	<u>Yellow-third</u> 23.500
		<u>Red-fourth</u> 16.000

*All numbers expressed in mean averages from the total times each color was selected

TABLE VII

DETAILED BREAKDOWNS OF COLOR PREFERENCE RATINGS BY CATEGORY AND COLOR FOR FEMALES*

Young girls' clothing, age 6-12				
	Red-first	Blue-second	Yellow-third	Green-fourth
Sportswear.....	132-first	24-third	32-second	16-fourth
Sleepwear.....	41-third	61-second	82-first	20-fourth
Dress around the home..	67-first	54-second	23-fourth	53-third
Evening dress.....	41-third	83-first	63-second	18-fourth
Average.....	<u>70.25</u>	<u>55.50</u>	<u>51.50</u>	<u>26.75</u>
Young females' clothing, age 13-19				
	Red-first	Yellow-second	Blue-third	Green-fourth
Sportswear.....	88-first	43-second	39-third	34-fourth
Sleepwear.....	76-tie	76-tie	41-third	14-fourth
Dress around the home..	63-first	33-fourth	62-second	46-third
Evening dress.....	30-fourth	70-second	71-first	34-third
Average.....	<u>64.25</u>	<u>55.50</u>	<u>53.25</u>	<u>32.00</u>
Womens' clothing, age 20-50				
	Blue-first	Green-second	Red-third	Yellow-fourth
Sportswear.....	74-first	67-second	42-third	22-fourth
Sleepwear.....	94-first	21-fourth	30-third	60-second
Dress around the home..	94-first	57-second	32-third	21-fourth
Evening dress.....	121-first	35-second	23-third	24-fourth
Average.....	<u>95.75</u>	<u>40.00</u>	<u>32.25</u>	<u>31.75</u>
Older women's clothing, age 50 plus				
	Blue-first	Green-second	Yellow-third	Red-fourth
Sportswear.....	98-first	87-second	56-third	15-fourth
Sleepwear.....	98-first	32-second	5-fourth	19-third
Dress around the home..	83-first	63-second	9-fourth	29-third
Evening dress.....	128-first	51-second	30-third	9-fourth
Average.....	<u>101.75</u>	<u>58.25</u>	<u>25.00</u>	<u>19.75</u>

*Mean average ratings for each color for each type of person listed

TABLE VIII

DETAILED BREAKDOWNS OF COLOR PREFERENCE RATINGS BY CATEGORY AND COLOR FOR MALES*

Young boys' clothing, age 6-12					Young boys' clothing, age 13-19				
	Blue-first	Red-second	Green-third	Yellow-fourth		Blue-first	Red-second	Green-third	Yellow-fourth
Sportswear.....	59-second	83-first	44-third	19-fourth	Sportswear.....	40-third	62-second	64-first	38-fourth
Sleepwear.....	79-first	61-second	39-third	26-fourth	Sleepwear.....	93-first	42-second	32-fourth	36-third
Dress around the home..	88-first	51-third	56-second	9-fourth	Dress around the home..	77-first	73-second	41-third	13-fourth
Evening dress.....	140-first	9-third	50-second	0-fourth	Evening dress.....	139-first	45-second	5-fourth	15-third
Average.....	91.50	51.00	47.25	15.00	Average.....	87.25	55.50	35.50	25.50
Young mens' clothing, age 20-50					Mens' clothing, age 20-50				
	Blue-first	Green-second	Red-third	Yellow-fourth		Blue-first	Green-second	Yellow-third	Red-fourth
Sportswear.....	63-second	84-first	28-fourth	30-third	Sportswear.....	63-second	84-first	28-fourth	30-third
Sleepwear.....	109-first	57-second	21-third	18-fourth	Sleepwear.....	109-first	57-second	21-third	18-fourth
Dress around the home..	134-first	62-second	7-third	2-fourth	Dress around the home..	134-first	62-second	7-third	2-fourth
Evening dress.....	176-first	24-second	5-third	0-fourth	Evening dress.....	176-first	24-second	5-third	0-fourth
Average.....	120.50	56.75	15.25	12.50	Average.....	120.50	56.75	15.25	12.50
Older mens' clothing, age 50 plus					Older mens' clothing, age 50 plus				
	Blue-first	Green-second	Yellow-third	Red-fourth		Blue-first	Green-second	Yellow-third	Red-fourth
Sportswear.....	98-first	87-second	13-third	7-fourth	Sportswear.....	98-first	87-second	13-third	7-fourth
Sleepwear.....	104-first	58-second	25-third	18-fourth	Sleepwear.....	104-first	58-second	25-third	18-fourth
Dress around the home..	113-first	69-second	13-third	10-fourth	Dress around the home..	113-first	69-second	13-third	10-fourth
Evening dress.....	180-first	22-second	1-fourth	2-third	Evening dress.....	180-first	22-second	1-fourth	2-third
Average.....	123.75	59.00	13.00	9.25	Average.....	123.75	59.00	13.00	9.25

*Mean average ratings for each color for each type of person listed

CHAPTER V

SUMMARY AND CONCLUSIONS

I. SUMMARY

The research data showed no evidence that color preferences are dependent on the variables tested, with the possible exception of some areas of income.

For women age 20-50 years old, income scores were significantly different at the .05 level in testing for three of the four clothing categories. Sleepwear, sportswear, and dress around the home displayed significant differences while evening dress did not. It was also interesting to note that 153 of the 205 women answering the income and color preference questions, fell into the age category of 20-50 years old.

Consistency of color preferences was more noticable than any differences among the variables tested.

The overall rank ratings of colors for all tests gave first place to blue, second to green, third to red, and fourth to yellow. The findings were nearly similar to the female color preferences listed by Eysenck in Table I of the Review of Literature. However, a breakdown of the new ratings demonstrated variety in several placings within the general rank ratings.

In summary, the original problem of determining the different types of color preferences of different types of women was answered in the negative. General differences were not found,

with the possible exception of income in a few similar categories. The three original objectives of: examining the types of color preferences made by females in relation to specific types of clothing; further examination of the types of color preferences made by females of various ages, incomes, educational levels, et cetera; and the examination of possible relationships of color preferences to the different geographic areas of the State of Kansas, were all achieved. Hypotheses one and two revealed color preference differences for many different types of clothing and for the different types of people wearing the clothing types represented in Tables VI and VII. Hypotheses three through fourteen did not reveal any overall significant differences.

II. CONCLUSIONS

The results of the test were very revealing regarding the findings of consistency for color preferences. With the exception of some income categories, the eleven remaining variables tested against the thirty-two color preference variables, did not produce any overall significant differences. Therefore, it can be said that the women tested demonstrated considerable consistency in their overall preference for the clothing colors tested.

Caution should be used in the application of color preference findings to specific types of clothing. Most tests showed the general preference order to be blue, green, red, and yellow. However, in sleepwear, for all categories, yellow was second, red was third, and green fourth. Further caution is necessary when color is applied to specific types of clothing worn by

specific types of people. For instance, Table VII shows that red was first, blue second, yellow third, and green fourth in young girls' clothing, age 6-12. Additional caution should be noted in the same example where the sleepwear color preferences placed yellow first, blue second, red third, and green fourth.

Table VII shows that while there are some overall generalizations for color preferences based on the new tests, there are also many cautions because of the variability demonstrated within each generalization when color was referred to specific types of clothing on specific types of people.

The two prominent findings of the study, one showing some significant differences by income levels for womens' clothing colors in ages 20-50 and the other finding that showed extreme consistency for color preferences, deserve additional comment.

While there may be a relationship between income and color preferences for clothing for women ages 20-50, a close look at the chi-square contingency tables did not exhibit a distinct trend. Differences varied from color to color and they did not form patterns. The main benefit of this finding would be the suggestion for additional tests comparing income against color preferences over broader specific areas other than clothing.

The similarity between the four geographic areas of Kansas and color preferences is very important for two main reasons. First, the finding of no significant differences by area of the State sampled, showed that Kansas women in the sample were not influenced by their different geographic surroundings. Secondly, the four different geographic areas served as the basis

for the entire sample which influenced the other variables in all the color preference research. The lack of differences by area gave the sample a solid foundation for other measurements.

Future research is needed using a more numerous variety of colors on different objects other than clothing. More tests are also needed in the more detailed and specific applications of clothing in various location situations, such as around the home and at work. However, if a greater variety of colors and a wider choice of locations were tested, extremely large samples would be necessary to find any significant differences which would indicate a conclusive trend.

The findings of this study, especially the color preference rank ratings in Tables VI and VII, should be most useful to the Extension communicator when selecting colors for clothing in communications designed to reach women found in the sample of this research.

BIBLIOGRAPHY

BIBLIOGRAPHY

- Barror, Merna Jan, and Anna M. Creekmore. "Relationship of Physical Coloring and personality to Color Preferences for Clothing," Journal of Home Economics, LVII (June, 1965), pp. 447-50.
- Birren, Faber. Color, Form, and Space. New York: Reinhold Publishing Corporation, 1961.
- _____, "Colors that Sell: How Can You Find Them?," Sales Management, (June 6, 1958), pp. 38-41.
- Brown, W. T., and J. L. Jenemann. "The Use of Color in Transparent Packaging," Modern Packaging, XXIX (April, 1956), pp. 95-98.
- Charlton, Mary Polson. "Reactions to Built-in Color in Houses," Journal of Home Economics, LVII (March, 1965), pp. 176-82.
- Eysenck, H. J. "A Critical and Experimental Study of Colour Preferences," The American Journal of Psychology, LIV (July, 1941), pp. 394-96.
- Guilford, J. P., and Patricia C. Smith. "A System of Color Preferences," The American Journal of Psychology, LXXII (December, 1959), pp. 487-502.
- Hass, Walter A. "Investigation of the Stability of Color Preferences," Journal of Consulting Psychology, XXVII (September, 1963), pp. 537-39.
- Johnson, Guil. "Concentration on Color Doubles Sales for Wooster Rubber Company," Printer's Ink, CCLXI (December 6, 1957), p. 62.
- Kahn, Edwin, William Derment, Charles Fisher, and Joseph E. Barmack. "Incidence of Color In Immediately Recalled Dreams," Science, CXXXIX (September, 1962), p. 1054-55.
- Levy, Leon H., and Ronald B. Krug. "The Connotative Impact of Color on the Rorschach and Its Relation to Manifest Anxiety," Journal of Personality, XXV (September, 1957), pp. 617-25.

- McCoy, Edward P. "Influence of Color on Audiences' Perception of Reality in Film," AV Communications Review, X (January, 1962), pp. 70-72.
- McInnis, Jacquelyn Hobbs, and Jane Kelly Shearer. "Relationship Between Color Choice and Selected Preferences of the Individual," Journal of Home Economics, LVI (March, 1964), pp. 181-87.
- Pangborn, Rose Marie, and Brenda Hansen. "The Influence of Color on Discrimination of Sweetness and Sourness in Pear-necter," The American Journal of Psychology, LXXII (June, 1963), pp. 315-17.
- Rudolph, Harold J. "Report Shows that Four-color Ads are Advertisers' Best Buy," Printer's Ink, XLXIII (May 16, 1958), p. 13.
- Smith, Sidney L. "Color Coding and Visual Separability in Information Displays," Journal of Applied Psychology, XLVII (September, 1963), pp. 358-64.
- Stalker, Delaine. "Color Preferences and Their Use In Selected Residences in Manhattan, Kansas," Unpublished Master's thesis, Kansas State University, Manhattan, Kansas, 1960.
- Starch, Daniel. Measuring Advertising Readership and Results. New York: McGraw-Hill Book Company, 1966.
- Sughrue, Margaret Helen. "Color Preferences In Clothing of A Selected Group of Retired Women 65 Years of Age and Over," Unpublished Master's report, Kansas State University, Manhattan, Kansas, 1966.
- Young, Harold C. "Mailed Media: Color and Black-and-White Comparisons," Journal of Home Economics, LVII (May, 1965), pp. 364-65.

A STUDY OF FEMALE COLOR PREFERENCES IN CLOTHING FOR
USE BY COMMUNICATORS IN EXTENSION EDUCATION

by

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A STUDY OF FEMALE COLOR PREFERENCES IN CLOTHING FOR USE BY COMMUNICATORS IN EXTENSION EDUCATION

Color, like other communication design elements, can be used to enhance a message, to have a neutral effect, or to interfere with a message. The Extension communicator needs to have research information to guide decisions when selecting colors for educational messages.

Determining the different types of color preferences of different types of women is one problem faced by Extension communicators in attempting to reach the female audience. A review of past research showed a need for more detailed and limited study that area.

The study was designed to find significant differences for variables in a sample of female types within the Extension audience, which could assist in predicting future color use in Extension communications. A questionnaire was designed to test female color preferences for four different types of male and female clothing: sleepwear; sportswear; dress around the home; and evening dress. The tests also attempted to find differences among female color preferences by county area, age, education, home location, favorite communication, income, clothing fashion, clothing color, hair shade, skin shade, personality, and leadership. Only the basic colors of blue, red, green, and yellow were available for selection. The color choices were projected on four different types of men and women ranging in age from six years to old age. Eight questionnaires were given to the County Extension Home Economists in forty

Kansas counties, selected at random in equal numbers from four representative geographic areas of the State. To insure a diverse sample, each County Extension Home Economist was asked to find eight different types of women: half living on farms and half living off farms; half with college educations and half without college educations; and half 30 years of age or older and half 29 year of age or younger.

The results of the tests did not show any major trends for the differences found, with the possible exception of income. Three of the four clothing categories for women age 20-50 showed significant differences at the .05 level when compared against different incomes. However, only one additional variable of the remaining 29 tested against income, showed a significant difference at the .05 level. The total study revealed 19 significant differences at the .05 level out of 384 possibilities, but none of them exhibited a trend closer than the above income variable.

While differences were not significant for most of the tests performed the reverse trend of considerable consistency was exhibited. More than 85 per cent of the variables tested were not significantly different beyond the 50 per cent level.

The overall rank ratings for color preferences, for all categories, placed blue first, green second, red third, and yellow fourth. The general rank rating remained the same for sportswear and dress around the home categories when they were viewed apart from the overall ratings. However, the sleepwear category placed blue first, yellow second, red third, and green fourth; while

the evening dress category placed blue first, green second, yellow third, and red fourth. Further differences were observed when each of the categories were broken down by the eight different categories of people represented in the text.

Additional color preference research is needed within more limited areas, such as income, to more accurately define any differences which could exist.

The rank ratings of color preferences found in the study, should be especially useful to the Extension communicator when selecting colors for clothing in visual communications designed to reach the females in the research sample.